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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,885	08/18/2003	Brian Eugene Lockyear	06816.0505	3338

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EXAMINER

ROSSOSHEK, YELENA

ART UNIT	PAPER NUMBER
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2825

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AKC

Office Action Summary	Application No. 10/642,885	Applicant(s) LOCKYEAR ET AL.	
	Examiner Helen Rossoshek	Art Unit 2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the Application 10/642,885 filed 08/18/2003.

2. Claims 1-14 are pending in the Application.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally **limited to a single paragraph** on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to, which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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5. Claims 1, 12 and 14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The term "an electromagnetic waveform" has no support or description in the instant Specification.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1, 12 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: it is not clear how the limitations of the claims 1, 12 and 14 performing the steps of the mathematical operation and assertions on variables representing constraints for verification of a representation of an electronic design of an integrated circuit related to an electromagnetic waveform since there is no description or support or mentioning in the Specification of the term "an electromagnetic waveform".

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1- 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Plaisted (US Patent 6,131,078).

With respect to claims 1, 2, 3, 11, 12, 13 and 14 Plaisted teaches an computer program for producing a decomposition of a constraint during functional verification of a representation of an electronic design of an integrated circuit within a computer implemented methodology for verification of the circuit's properties (col.5, ll.47-48; col. 1, l.17, ll.19-22), a method for producing a decomposition of a constraint within decomposition modules (col. 5, ll.3-4) wherein decomposition modules are used decompose the Boolean formula into parts and Boolean formula represents one or more objects including system's constraints (col. 4, ll.58-60) of the integrated circuit for the purpose of the verifying that circuit (col. 4, ll.8-10), a computer usable medium having computer readable code using the methodology of a computer implemented system which executes a number of modules (col. 5, ll.65-67); the computer program comprising the following steps when executed by a data processing system (col. 25, ll.53-58): producing an H term by quantification of a first variable from the constraint by using methodology of decomposition module (col. 14, ll.47-48; col. 7) and quantification of the Boolean formula representing the integrated circuit under verification (col. 4, ll.11-12), wherein the Boolean formula $(\exists x)B(x, \text{true})(\exists y)C(y, \text{true})$ is represented in the form as $(B_1 \text{ op } B_2)$ and B_1 represents a first variable (col. 14, ll.40-42; l.53); producing a G term by quantification of a second variable, different than the first variable, from the constraint within representation Boolean formula above and using the conception of the

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rearranging of the quantifiers to obtain subformula of the desired form (col. 14, ll.29-31), wherein B_2 represents a second variable, which is different from the first variable B_1 since B_1 and B_2 have no free variables in common (col. 14, ll.53-55); returning the H term and the G term as a decomposition of the constraint if a result of a Boolean connective operator, applied to the H term and the G term, is functionally equivalent to the constraint within formula decomposition module to process Boolean formula B which is equivalent to formula A (col. 14, ll.46-48) in the form $(B_1 \text{ op } B_2)$ and having the same Boolean connective operator (col. 14, ll.53-56), wherein Boolean formula represents one or more objects including system's constraints (col. 4, ll.58-60).

With respect to claims 4-10 Plaisted teaches:

Claim 4: recursively repeating the steps of producing an H term and producing a G term, with the H term taking a place of the constraint in the recursion; and ending the recursion when the H term produced is a function of no variables within an ability of the system to create subformula of the Boolean formula (itself) (col. 8, ll.16-17) and using the conception of the rearranging of the quantifiers to obtain subformula of the desired form (col. 14, ll.29-31), where Boolean formula might be quantified by a simpler equivalent formula with a number of refinements (col. 9, ll.45-47);

Claim 5: returning, as a decomposition of the constraint, a set containing each G term produced prior to a subsequent recursion within an ability of the system to create subformula of the Boolean formula (itself) (col. 8, ll.16-17) and using the conception of the rearranging of the quantifiers to obtain subformula of the desired form (col. 14, ll.29-

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31), where Boolean formula might be quantified by a simpler equivalent formula with a number of refinements (col. 9, ll.45-47);

Claim 6: merging overlapping factors, in the set containing each G term produced prior to a subsequent recursion, prior to returning the set as a decomposition of the constraint (col. 8, ll.16-21);

Claims 7 and 9: the decomposition is an AND decomposition, the quantification is existential quantification and the Boolean connective operator is an AND operator (col. 14, ll.53-58; col. 7, ll.41-43);

Claims 8 and 10: the decomposition is an OR decomposition, the quantification is universal quantification and the Boolean connective operator is an OR operator (col. 14, ll.53-58; col. 7, ll.41-43).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen Rossoshek whose telephone number is 571-272-1905. The examiner can normally be reached on 7:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner
Helen Rossoshek
AU 2825

A handwritten signature in black ink, consisting of a large, stylized 'A' followed by a series of loops and a long horizontal stroke extending to the right.

A. M. Thompson
Primary Examiner
Technology Center Z800